

Case Series of Transnasal Endoscopic Sphenopalatine Artery Ligation (TESPAL) for Epistaxis and Review of Literature

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ABSTRACT

Background: Epistaxis is a common condition, with about 6% of cases requiring medical intervention due to severe or recurrent bleeding. Posterior epistaxis often necessitates surgical management when conservative measures fail.

Objective: To assess the effectiveness of transnasal endoscopic sphenopalatine artery ligation (TESPAL) in refractory epistaxis.

Methods: A case series of six patients with severe or recurrent epistaxis unresponsive to conservative treatment was analyzed. All patients underwent TESPAL with or without middle meatal antrostomy. Outcomes included bleeding control, complications, and hospital stay.

Results: All patients achieved complete control of epistaxis following TESPAL. The procedure was associated with minimal complications, good patient tolerance, and reduced hospital stay.

Conclusion: TESPAL is a safe, effective, and minimally invasive option for managing refractory epistaxis, offering high success rates with low morbidity and shorter hospitalization.

Keywords: Epistaxis, refractory epistaxis, TESPAL

INTRODUCTION

Epistaxis commonly known as nose bleed, is not an uncommon problem that can happen to anyone at some point in life. Among all the nosebleeds, only 6% cases will be severe, needing medical help.¹ This 6% cases are those patients who presents with bleeding from the nasal cavity, nasopharynx which is severe, persistent, recurrent, impacts quality of life and will need medical treatment. Studies have shown that epistaxis accounts for ~0.5% of all emergency visits and up to one-third of ENT emergencies, with only ~0.2% requiring hospitalization for severe bleeding.^{2,3}

Epistaxis can occur due to varied causes like traumatic, iatrogenic, vascular malformations, tumors of nose or nasopharynx, secondary to systemic diseases. Anterior epistaxis, typically arising from the Kiesselbach plexus on the anteroinferior nasal septum, is more common and usually amenable to conservative management. In contrast, posterior epistaxis, often involving Woodruff's plexus, tends to occur in older adults and is more likely to require advanced intervention.

Management of epistaxis is determined by the location and severity of bleeding. Initial treatment may include direct

pressure, topical vasoconstrictors, and chemical or electrical cautery. Persistent or severe bleeding may require anterior or posterior nasal packing followed by trans-nasal endoscopic sphenopalatine artery ligation (TESPAL) and in cases of intractable bleeding, external carotid artery ligation.⁴ TESPAL can be done in two techniques with or without middle meatal antrostomy. We present 6 cases wherein TESPAL had to be done to prevent epistaxis with good success rate, fewer complications, cost-effective, and early hospital discharge.

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CASE SERIES

A Case series of 6 male patients with ages ranging from 30-55 years, who underwent transnasal endoscopic sphenopalatine artery ligation (TESPAL) in our department between 2024 and 2025. All these patients had severe posterior epistaxis not controlled by nasal packings. Among the 6 patients, 4 patients had hypertensive bleed and other 2 patients had deranged liver enzymes due to alcohol addiction. These patients did not have epistaxis secondary to trauma, post-surgical epistaxis, or epistaxis secondary to benign or malignant tumours.

TESPAL was performed in all patients under general anaesthesia with the patient in a reverse Trendelenburg position with at least 15° of head elevation. After the removal of nasal packing, a careful saline wash of the nasal cavity was done with the removal of the blood clots, and nasal cavities were examined with a 0° endoscope. The nasal cavity was packed with cotton pledgets soaked in diluted adrenaline and saline (1:10,000) for 5 minutes before starting the procedure. A local infiltration with lidocaine-adrenaline (1:100,000—lidocaine) solution was injected at the level of the middle turbinate insertion at the posterior end and the uncinate process. Medialization of the middle turbinate was sometimes required to get wide access to the middle meatus.

In 4 cases, a standard uncinectomy, middle meatal antrostomy and exposure of posterior wall of the maxillary sinus were done followed by elevating the mucosa posterior to the posterior wall of the maxillary sinus wherein, a small triangular projection of bone called crista ethmoidalis is located anterior or anteroinferior from the sphenopalatine foramen, elevation of this mucosal flap allowed the identification of the sphenopalatine artery (SPA) followed by cauterization of the vessel. Figure-1 Image showing posterior wall of maxillary antrum and identification of the sphenopalatine artery. (1-Posterior wall of left maxillary antrum, 2- Middle turbinate, 3- elevated mucosal flap, Black arrow- Sphenopalatine artery).

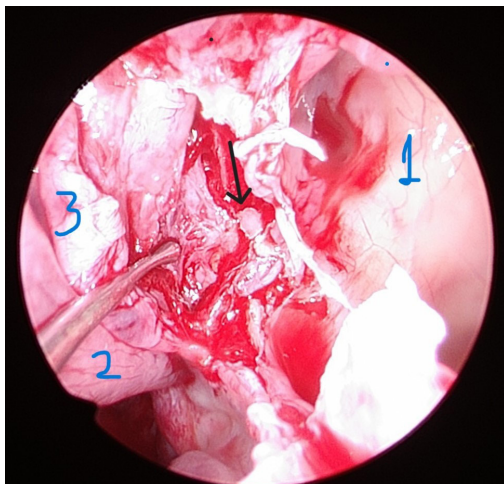


Figure 1: Image showing posterior wall of maxillary antrum and identification of the sphenopalatine artery. (1-Posterior wall of left maxillary antrum, 2- Middle turbinate, 3- elevated mucosal flap, Black arrow- Sphenopalatine artery).

In 2 cases, we didn't do a middle meatal antrostomy, we went straight ahead with a vertical mucosal incision 1 cm anterior and inferior to the posterior end of middle turbinate and elevated the mucosal flap which exposed the crista ethmoidalis and coblation of the sphenopalatine artery was done.

All the patients were re-evaluated after 1 week of the procedure, and none of the patients had an episode of bleeding. There was no difference in the outcome of patients after TESPAL with or without middle meatal antrostomy.

DISCUSSION

Epistaxis is not an uncommon otolaryngological emergency, with the majority of cases being self-limiting and originating from the anterior nasal septum. Among all the nosebleeds, only 6% cases will be severe, needing definitive intervention.¹ In such cases, TESPAL has emerged as a highly effective and minimally invasive surgical option.

In this case series, a high success rate in controlling refractory epistaxis, was seen in patients undergoing TESPAL which is consistent with existing literature reporting control rates upto 98%.⁵ The effectiveness of this technique is mainly due to direct visualization and targeted cauterization or coblation of the sphenopalatine artery and its branches.

In comparison to traditional methods such as posterior nasal packing or external carotid artery ligation, TESPAL offers several advantages. Nasal packing, although commonly used, is associated with significant patient discomfort, risk of infection, hypoxia, and prolonged hospital stay. External carotid artery ligation and maxillary artery ligation, on the other hand, are more invasive and carry higher morbidity. TESPAL avoids external incisions, reduces operative time, and allows precise identification of any variation in the anatomy of the artery for coblation or cauterization.

The identification of accessory branches of the sphenopalatine artery, is very important, if missed, may lead to recurrence of bleeding.⁶ In our series, meticulous endoscopic exploration and ligation of all visible branches were performed, contributing to the good outcome.

Complication rate associated with TESPAL is generally low. Occasional minor complications that can occur are nasal crusting, synechiae formation, and transient palatal numbness, while major complications are rare.⁷ In our series, no significant intraoperative or postoperative complications were encountered, reinforcing the safety profile of this procedure.

CONCLUSION

TESPAL is minimally invasive, safe and effective technique for the management of refractory posterior epistaxis. It has low morbidity, unlike more surgical invasive approaches and offers high success rates and avoids the discomfort and complications associated with prolonged nasal packing. Early consideration of this procedure in appropriate patients can lead to better outcomes, reduced hospital stay, and improved patient satisfaction.

REFERENCES

1. Tunkel DE, Anne S, Payne SC, Ishman SL, Rosenfeld RM, Abramson PJ, et al. Clinical Practice Guideline: Nosebleed (Epistaxis). *Otolaryngol Neck Surg.* 2020 Jan;162(S1). doi:10.1177/0194599819890327
2. Chaaban MR, Zhang D, Resto V, Goodwin JS. Demographic, Seasonal, and Geographic Differences in Emergency Department Visits for Epistaxis. *Otolaryngol Neck Surg.* 2017 Jan;156(1):81–6. doi:10.1177/0194599816667295
3. Pallin DJ, Chng YM, McKay MP, Emond JA, Pelletier AJ, Camargo CA. Epidemiology of epistaxis in US emergency departments, 1992 to 2001. *Ann Emerg Med.* 2005 Jul;46(1):77–81. doi:10.1016/j.annemergmed.2004.12.014 PubMed PMID: 15988431.
4. Mylonas S, Skoulakis C, Nikolaidis V, Hajjioannou J. Epistaxis Treatment Options: Literature Review. *Indian J Otolaryngol Head Neck Surg Off Publ Assoc Otolaryngol India.* 2023 Sep;75(3):2235–44. doi:10.1007/s12070-023-03824-z PubMed PMID: 37636777; PubMed Central PMCID: PMC10447774.
5. Kumar S, Shetty A, Rockey J, Nilssen E. Contemporary surgical treatment of epistaxis. What is the evidence for sphenopalatine artery ligation? *Clin Otolaryngol Allied Sci.* 2003 Aug;28(4):360–3. doi:10.1046/j.1365-2273.2003.00724.x PubMed PMID: 12871253.
6. Lee HY, Kim H, Kim S, Son EJ, Kim JW, Cho NH, et al. Surgical Anatomy of the Sphenopalatine Artery in Lateral Nasal Wall. *The Laryngoscope.* 2002 Oct;112(10):1813–8. doi:10.1097/00005537-200210000-00020
7. Snyderman CH, Goldman SA, Carrau RL, Ferguson BJ, Grandis JR. Endoscopic Sphenopalatine Artery Ligation is an Effective Method of Treatment for Posterior Epistaxis. *Am J Rhinol.* 1999 Mar;13(2):137–40. doi:10.2500/105065899782106805